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Are Low Food Prices Pro-Poor?

Net Food Buyers and Sellers in Low-Income Countries

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Abstract

There is a general consensus that most of the poor in developing countries are net food buyers and food price increases are bad for the poor. This could be expected of urban poor, but it is also often attributed to the rural poor. Recent food price increases have increased the importance of this issue, and the possible policy responses to these price increases. This paper examines the characteristics of net food sellers and buyers in nine low-income countries. Although the largest share of poor households are found to be net food buyers, almost 50 percent of net food buyers are marginal net food buyers who would not be significantly affected by food price increases. Only three of the nine countries examined exhibited a substantial proportion of vulnerable households. The average incomes (as measured by expenditure) of net food buyers were found to be higher than net food sellers in eight of the nine countries examined. Thus, food price increases, ceteris paribus, would transfer income from generally higher income net food buyers to poorer net food sellers. The analysis also finds that the occupations and income sources of net sellers and buyers in rural areas are significantly different. In rural areas where food production is the main activity and where there are limited non-food activities, the incomes of net buyers might depend on the incomes and farming activities of net food sellers. These results suggest the need for reevaluation of the consensus on the impact of food prices on food needs. Further work on the regional differences, and more important, on the second order effects, are necessary to answer these questions more precisely. Only on the basis of further analysis can we start generating better policy responses.

This paper—a product of the Trade Team, Development Research Group—is part of a larger effort in the department to explore the links between Poverty, Trade, and Agricultural Policies. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at Maksoy@worldbank.org.

Are Low Food Prices Pro-Poor? Net Food Buyers and Sellers in Low-Income Countries[1]

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I. Issues and Background

Over the last few years, food prices have increased significantly and many countries are implementing trade and other policies to reverse (or to slow) this increase in these prices due to the fear of the expected negative effect on the poor households. Policies used include elimination and reduction of import tariffs, export taxes and bans, and other instruments. These policies are further distorting the agricultural policies in industrial and developing countries. Increasing demand by the middle-income countries, increased demand for bio-fuels etc. are the leading causes for the much higher than expected prices. Thus, the issues relating to the impact of higher food prices on the poor (which were being discussed under the Doha round) have gained greater importance and urgency.

There has been a consensus that high food prices are bad for the poor because most of the poor are net food buyers, even in rural areas (Ravallion 1989, Seshan and Umali-Deininger, 2007; Byerlee, Myers and Jayne 2006; Ivanic and Martin 2008).[3] Furthermore, a significant number of poor countries are net food importers and higher food prices would hurt them. While there are limited number of studies that estimate the numbers of net food buyers and sellers and their incomes, most of them have shown that more poor households are net food buyers than sellers, and therefore argued that high food prices would hurt the more numerous poor net food buying households. For instance, in a recent study, Christiaensen and Demery (2006) analyzed staple crops producers in rural areas of four African countries and found that even where agriculture is the dominant activity, net buyers of food are much more numerous than net sellers. This relationship held at all income quintiles, and net buyers were much more numerous than net sellers even among the poorest. Jayne, Yamano, Nyoro, and Awuor (2001) showed that Kenya maize net sellers had higher incomes, were more concentrated, and were fewer in number than net maize buyers. Several other studies have shown that even among the poor, there are more net food buyers than sellers (Coady et al, forthcoming; Seshan and Umali-Deininger, 2007; Byerlee, Myers and Jayne 2006; Warr 2005). Thus, it seems safe to conclude that the number of net food buyers, whether rich or poor, is much more numerous than the net food sellers.[4] Simulations also show that in many countries first round effects of a price increase could be anti poor (Hoekman and Olarreaga 2007; Ivanic and Martin 2008).[5]

There is another strand of work arguing that in developing countries there is a much higher incidence of poverty in rural areas and this poverty is partly driven by low and declining food prices, at least until recently. Especially in low-income countries,

[3] Although Ravallion, (1989), points out that if secondary effects of rice price increases are taken into account through labor markets, it could lead to higher incomes for the poorest after 3-4 years.

[4] In a sense, this is an obvious result and is part of the development process. As countries develop and agriculture becomes more productive, number of agricultural producers gets smaller, and the number and share of households who are net buyers of food increase (Schultz 1978; Hayami 2005).

[5] Some recent studies have also emphasized heterogeneity of net sales positions and welfare impact of trade liberalization on the entire income distribution of poor rural household rather focusing more narrowly on the poverty index (Ravallion 2006; Ravallion and Lokshin 2004; Coady et al, forthcoming).

serious taxation of agriculture through lower commodity prices might have contributed to extensive rural poverty (Schiff and Valdes, 1992, World Development Report 1986, WB 1986, and Global Economic Prospects, WB 2004). Furthermore, there is increasing evidence that the core poverty in developing countries is in rural areas and not in the urban centers (World Development Report, 2008, WB 2007). There is also evidence that the net food sellers are very poor as well. Thus, higher food prices might reduce the extensive poverty in rural areas and among the poor food sellers.

There are other studies that emphasize the links between net food buyers and sellers in rural areas. These studies emphasize the higher income multipliers between agricultural and non farm incomes in rural areas. There is a large body of evidence that correlates higher agricultural incomes with higher non farm activity and incomes. (See Haggblade, Hazel and Dorosh, 2007, for an extensive survey). In many low income countries where food production is the dominant rural and agricultural activity, most of the agricultural households could be net food sellers and rural non farm activity households could be net food buyers. Thus, higher incomes for the food producing households might induce higher incomes for non food producing households through multiplier effect while reducing their real incomes through higher prices for food expenditures.[6]

From the view of food security, lower food prices help the poor to receive higher food intake. This advantage has to be weighted against lower agricultural and possibly rural incomes which reduce food security, and transfer incomes from poorer rural to richer urban areas. Which of the two effects predominates is an empirical question and it probably will vary across countries and regions and will depend on the income levels and income sources of the net food buying and selling households.

This paper delves into the characteristics of net food buyers and sellers to question the common perception that lower food prices could be pro-poor by examining net food sellers and buyers in nine low income countries. Specifically, it argues the following. First, although there are more poor net food buyers then sellers, about half of net food buying households is marginal net food buyers, and thus price increases will have a small effect on their welfare. However, there are pockets of vulnerable households in three out of nine countries that need to be taken care of if the food price increases are large and longer lasting.

Second, the average incomes of net food buyers are higher than the average incomes of net food sellers in eight of nine countries. Thus, higher food prices will, on average, transfer income from richer to poorer households and be pro poor. If on the other hand the comparison is made only among the poor households, then net food sellers were richer in five countries and poorer in only one country. This is similar for the rural poor as well. So among the poor, net buyers are poorer, and the price increases would hurt the relatively poorer of the two poor groups. However, among the rich, the opposite is true; that is the net food buyers are richer.

[6] Of course, there is also a negative effect on incomes from higher food prices.

In rural areas, most of the net food buying households are not farmers but are laborers or businessman. In regions where food production is the main activity, their incomes might depend on the demand from the food surplus households. [7] Half of net food buyers in rural areas in our sample of nine countries are not farmers (their incomes come primarily from wages and business). These household incomes are likely to depend on the expenditures of net food sellers, especially in rural areas where the primary economic activity is food production. Hence, lower food prices could lead to lower incomes of net food sellers, which in turn could lead to reduced demand for labor and services from net food buyer households. If this effect dominates, lower food prices, instead of increasing the real incomes (through consumption) of net food buyers in rural areas, might reduce them.

II. Data and Framework

This study uses household income and expenditure data from nine low-income countries to estimate more detailed income sources and expenditure patterns for net food buyer and seller households (see data description in Annex IV). The countries studied were geographically diverse, with three low-income countries from Asia (Bangladesh, Cambodia, and Vietnam) three from Latin America (Bolivia, Nicaragua and Peru), and three from Africa (Ethiopia, Madagascar and Zambia).[8] All the selected countries were poor within the context of their continents (1998 PPP adjusted per capita incomes vary between $566 for Ethiopia and $4,180 for Peru.), and the household surveys were done between 1998 and 2003. All these countries had significant rural populations, with Peru the most urban, and Bangladesh the most rural.[9]

For this study, net buyers (sellers) are defined as the households that have purchases (sales) of defined food products greater than the sales (purchases) of similar products.[10] Expenditures on food are obtained from the expenditures modules of household surveys while the sales are obtained from the incomes modules of the surveys. Expenditure and income levels are not identical in most of the surveys. Thus, there might be under or overestimation of net purchases and sales. In all the household surveys expenditures are believed to be more carefully measured than the incomes and provide greater detail[11].

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[7] See Porto (2005); using a model that emphasizes second order agricultural wage effects and substitution in consumption, show that poor net food buyers might gain from maize price increases in rural Mexico.

[8] The selection criterion was the availability and reliability of agricultural income data in the household surveys. This work initially started with 15 low income countries and six of them had to be dropped due to lack of detailed agricultural information. In most countries, surveys were undertaken over a year so that seasonality in food purchases and sales is minimized. Survey details are presented in Annex IV.

[9] The definitions of rural and urban are different for different countries. That is why the information is presented separately for national averages in addition to rural and urban.

[10] Of course, for modeling and simulations, whole distribution of food buyers and sellers should be used. But for the purposes of this paper, discrete variables are necessary to show the shares of different groups.

[11] The number of food items listed in the expenditure module is much more numerous than the food items recorded in the income module. Sales of major staples are better recorded. That is the reason why the results with all food definition are presented in the annex rather than the main text— they are less reliable.

Two definitions of food are used in this study to try and link to the international trade and agricultural policy dimensions of food and also improve on the relevance for poverty assessment. In trade analyses, especially in trade negotiations, tariff and subsidy decisions are made at detailed commodity levels. Most of the policy debates in developing countries are also undertaken at the level of basic staples such as rice, wheat etc. On the other hand, if the analysis is focused on individual commodities, it becomes less useful for poverty analyses due to the high degree of substitutability among different food groups in consumption and somewhat less so in production. For that reason, it might be more useful to do the analyses with total food consumption than individual crops for the welfare implication predictions. However, having hundreds of individual food products makes it very difficult to measure impacts and even identify net buyers and sellers. To balance these conflicting needs, food is defined as being comprised of the main staples in each country that are also the staples in international trade (rice, wheat, etc.). This also allows the definition of food to partially link the literature on trade and agricultural policy with food security and poverty concerns. A second definition using total expenditures on food and total sales of food is also used and results are presented in tables in Annex I. These tables can be used to highlight food security issues. The definition of staple crops used in text tables to define net sellers and net buyers is presented in Annex II, Table A2.1.

Many of the earlier studies of food sellers and buyers have been limited to rural households. Changes in relative prices of food will, however, alter the income distribution between the rural and urban households, as well as altering the distribution of income between net sellers and buyers in rural areas. Since on average, urban households are richer than rural households and are predominantly net food buyers, increases in food prices could be pro-poor. In addition, even in urban areas in low income countries, a significant part of household income originates in agricultural activities, and there are net food sellers in urban areas as well. Thus, urban populations need to be considered to measure the potential impact of food price changes on overall welfare and therefore both rural and urban households are considered in this study. [12]

A final consideration in defining net food sellers and buyers is the use of a single period to classify households as net food sellers or buyers (as is commonly done in these studies). It is not uncommon for rural households to shift from net buyers to net sellers from year-to-year depending on crop yields, crop prices, cropping patterns, etc., and a point estimate of net buyers and net sellers might not capture this dynamic. Urban households would be expected to mostly be net buyers with little opportunity to shift to net sellers unless they are also directly engaged in agricultural production. Unfortunately, a lack of consistent panel data makes estimation of the magnitude of the year-to-year shifts difficult. Vietnam is one of the few countries where consistent panel data was available, and Isik-Dikmelik (2006) has shown that between 1993 and 1998 almost 21

[12] There are some problems using urban data along with rural. Not all countries have separate regional deflators that might bias the income levels of rural households downwards, if the cost of living is lower in rural areas. Among the sample countries five have regional deflators. They are Bangladesh, Bolivia, Madagascar, Vietnam, and Nicaragua.

percent of all households switched between being net sellers and net buyers of food.[13] These are very large shifts within a five year period and a period where food output increased significantly. These results for Vietnam raise caution that designating households as food net buyers or net sellers in any given period could be misleading because households are likely to shift between these designations. Thus, one needs to interpret the data presented here and in other studies with some caution and give closer attention to panel data where available.

III. A. Share of Households That Are Net Food Sellers and Buyers of Food

The proportion of households that were net food sellers in rural and urban areas in the nine countries examined is given in Table 1 for the main staples definition of food. Per capita income of the country and the share of households classified as rural are also shown, with the dates in the parentheses indicating the years of the household surveys. The results show that on average only 23 percent of all households and 32 percent of rural households were net food sellers, and as expected, the share of households that are net sellers tends to increase with the share of rural households. Annex table A1.1 shows the same information for the definition that includes all foods and shows that 25 percent of all households and 35 percent of rural households were net food sellers.

Table 1. Share of Net Food Seller Households [a] (percent)

	GDP Per Capita (PPP) 1998	Percent Rural	Share of Households[b]		
			Urban	*Rural*	*All*
Ethiopia, 2000	566	50.74	6.32	27.26	23.07
Zambia, 1998	678	47.76	2.75	29.56	19.10
Cambodia, 1999	1246	59.99	15.13	43.84	39.58
Bangladesh, 2000	1407	79.73	3.68	22.94	19.04
Vietnam, 1998	1689	71.16	6.55	48.22	38.08
Madagascar, 2001	1741	75.75	13.17	37.64	31.71
Nicaragua, 2001	1896	43.88	3.77	38.67	17.26
Bolivia, 2002	2205	41.98	1.23	24.61	9.97
Peru, 2003	4180	35.86	2.89	15.47	6.73
Unweighted Average	1734.2	56.32	6.17	32.02	22.73

(a) Food is defined as the main staple crops in each country. See Annex II.
(b) Share of Urban, Rural, and National Households respectively.

The share of households who are net food buyers is much larger than the net sellers especially in the Latin American countries, Bolivia, and Peru which have low rural

[13] She also found that 15 percent of net food buying households (8.7 percent of all households) shifted to being net sellers and 29 percent of net selling households (12.2 percent of all households) shifted to being net buyers. In rural areas, the shifts were even larger. Twenty-one percent of rural net food buyer households in 1993 became net food sellers in 1998 and 29 percent of rural net seller households became net food buying households. Not all the households who switched from net buyers to sellers were marginal buyers. Of the net buyer households whose net purchases were more than 10 percent of their expenditures, 15 percent switched from net buyer to net seller. It was similar in the case of net sellers.

populations. In those two countries more than 80 percent of households are net food buyers. Surprisingly, both Bangladesh and Zambia also have a low share of households that are net food sellers despite being much more rural. The lowest shares of net buyers are observed in Cambodia, Vietnam and Madagascar. Even in these countries, the shares of net food sellers are about a third of all households. In rural areas the proportion of households that are net food sellers are higher but never constitute the majority of households. For the nine countries in the sample, net sellers constitute less than a quarter of all households. In rural areas, this ratio increases to an average of a about one-third of the households. In other words, even in rural areas, a greater proportion of households (around two thirds) are net food buyers.[14]

Given the much smaller share of households who are net sellers, a related question is whether net seller households are predominant among the rich or poor households. The general presumption has been that net food sellers are relatively well to do households with larger farms, while the net buyers are assumed to be poor laborers or small farmers. To examine this hypothesis, households are separated into rich and poor categories. The poor are defined as households in the lowest four deciles of income distribution (measured as per capita total household expenditures), and rich are defined as households in the top two deciles of the national income distribution.[15] The shares in Table 2 are the proportion of net seller households in the top 20 percent and lowest 40 percent of national income distribution. In rural areas, it shows the net food seller households as a share of households in the bottom four and top two deciles of national income distribution in rural areas.

Table 2. Share of Rich and Poor Net Sellers of Households (percent)[d,a]

	National		Rural		Urban	
	Poor[b]	*Rich*[c]	*Poor*	*Rich*	*Poor*	*Rich*
Ethiopia	21.78	23.32	24.34	31.36	6.0	7.2
Zambia	23.89	12.98	28.08	29.05	2.7	2.7
Cambodia	43.73	21.66	45.41	30.68	23.1	8.5
Bangladesh	13.46	19.90	14.71	33.63	0.3	3.5
Vietnam	43.33	12.44	45.38	36.86	12.2	2.2
Madagascar	41.02	13.95	42.72	22.65	28.2	3.6
Nicaragua	27.25	8.64	39.35	32.26	7.5	1.6
Bolivia	17.02	3.90	27.11	19.01	1.4	0.8
Peru	11.92	1.85	15.51	17.53	6.2	1.1
Unweighted Average	27.04	13.18	31.40	28.12	9.74	3.46

(a) Main staple crops
(b) Poor households are those in the bottom 40% of the population by per capita income
(c) Rich households are those in the top 20% of the population by per capita income
(d) Percent of rural and urban, and of rich and poor

[14] It is interesting to note that in Cambodia and Madagascar; more than 10 percent of urban households are also net food sellers.
[15] Another way separating rich and the poor is to use a universal yardstick such as a dollar a day. Since the PPP per capita incomes vary significantly among the sample countries, we preferred to use the relative poverty measures for each country.

At the national level, on average, about 27 percent of poor households versus about 13 percent of rich households are net food sellers. This means that about 87 percent of rich households are net food buyers. This varies by country but only in Cambodia were there more than a fifth of rich households as net food sellers and this share goes down to 2 percent in Peru. In rural areas, the story is similar[16]. More specifically, only about a third of the poor and less than a third of rich households are net food sellers, the rest being net food buyers. A great majority of the rich are net food buyers even in rural areas. Thus, Table 2 shows that the category of the rural rich is not dominated by food sellers. In most of the countries a greater proportion of the poor households are net food sellers compared to the proportion of net food sellers among rich households. But on average, these differences in shares are not large which indicates that net sellers are distributed reasonably equally across the income distribution.

Finally, the mean values can be dominated by a few extreme households that have either very high or low incomes. To see whether these outliers are present, one needs to observe the distribution of buyer and seller households across the income deciles. Our data indicates that net buyer (or seller) households are distributed heterogeneously across income deciles (see Annex III, Figure A3.1 & FigureA3.2, for the graphs at the national level and for rural areas respectively). In most countries the share of net sellers is highest among the poor and gradually declines with higher incomes. At higher incomes, most of the households are net food buyers. These results persist at both the national level and in rural areas[17].

Given the magnitude of switching observed in Vietnam between being a net food seller and buyer, the point estimates of net food sellers might be misleading. The number of households that produce and sell staple food crops might give some indication of the potential for households to shift from being a net seller to buyer and vice versa. Table 3 shows the importance of staple food crop production and sales. On average, almost 45 percent of all households in these countries produce staple food crops and almost 30 percent sell some staples. In rural areas, these numbers are much higher, with about 64 percent of households producing staple food crops and 42 percent selling them. Even in urban areas, close to 15 percent of households produce staple food crops and 8 percent sell them.[18] Thus slight changes in yields, prices, or production could change the share of net food sellers and buyers, especially in rural areas. Further, given data problems in measuring food sales and purchases, the number of sellers and buyers might change significantly. These results also show why the large shifts between net sellers and buyers observed in Vietnam might not be unusual.

[16] Similarity of rural and national distributions of households indicates that the absence of regional deflators in some countries might not be a very serious problem.

[17] For urban areas, the number of observations on net sellers is insufficient for similar analysis by income level.

[18] If total food definition is used (Annex Table A.1.2), then almost 70 percent of households produce some food and 50 percent sell some food. This shows the importance of food production and sales for households in low income countries.

Table 3. Share of Households That Produce and Sell Staple Food Crops (Percent)

	Production of Food[a]			Sales of Food[b]		
	Urban	*Rural*	*All*	*Urban*	*Rural*	*All*
Ethiopia	9.34	71.46	55.37	4.70	36.86	28.52
Zambia	12.93	69.47	47.48	7.40	42.47	28.83
Cambodia	34.50	78.58	72.03	22.65	53.77	49.15
Bangladesh	8.75	51.64	42.94	5.38	33.49	27.79
Vietnam	11.50	81.30	64.30	8.31	54.33	43.12
Madagascar	28.93	75.67	64.36	14.61	41.67	35.10
Nicaragua	11.14	58.43	29.42	5.34	54.25	24.24
Bolivia	5.12	36.53	16.86	1.65	32.84	13.31
Peru	6.63	52.50	20.63	4.45	25.89	10.99
Unweighted Average	14.31	63.95	45.93	8.28	41.73	29.01

(a) Percent of Households with Positive Food Production
(b) Percent of Households with Positive Food Sales

III. B. Vulnerability

The definition of net food buyers and sellers used here and in other studies does not discriminate between marginal and significant food buyers, i.e. food buyers whose net purchases are a small portion of their incomes (as measured by expenditure) versus buyers whose food purchases constitute a significant share of their incomes. This latter category of households are vulnerable to large price shocks, while marginal food buyers could be rich households for which food purchases constitute a small share of income and not vulnerable, or alternatively they could be households that are close to being self-sufficient and purchase only small amounts of food.

Since we are interested in the poverty impact of food price changes, a more important group to focus on would be households that spend a significant share of their income on food. These groups would be more affected by increases in food prices than households whose food purchases are a small portion of their income. Thus, rather than focusing on the net buyer and seller definition, we can look in greater detail at vulnerable net food buyers, and the income sources of these vulnerable net food buyers and sellers in rural areas.

Since staples crops are used as the basic definition of food, the impact of staple food price increases would depend on the share of the main staples in the food basket and the share of overall food in the consumption basket of the household[19]. So, in countries where staples constitute a major portion of food consumption, the impact of the price change in that commodity will be more significant than the case where households have multiple food sources.

[19] We thank E. Sadoulet for pointing this out. See the tables (Box 4.7) in World Development Report 2008 (World Bank, 2007), which presents the share of staple foods in food consumption of the poor households in these countries and which were derived using this database.

To measure vulnerability, net food staples purchases of households as a percentage of their total expenditures (as a proxy for income) are used. For simplicity, we define two groups of net food buyers. Marginal net food buyers are households that spend less than 10 percent of their expenditures on food.[20] Vulnerable households are defined as households that spend more than 30 percent of their total expenditure on food. In table 4, the share of households in each category as a percentage of all and rural and urban households are presented.

Table 4. Intensity of Net Food Purchases [c] (percent)

	Marginal Food Buyers[a]			**Vulnerable Food Buyers[b]**		
	Urban	Rural	All	Urban	Rural	All
Ethiopia	39.0	18.0	22.2	12.4	20.0	18.5
Zambia	58.1	18.5	40.3	8.0	10.8	12.5
Cambodia	40.9	22.1	25.0	4.9	3.8	4.0
Bangladesh	28.2	11.6	14.9	9.6	22.1	19.6
Vietnam	39.4	22.0	26.3	3.4	4.4	4.2
Madagascar	44.7	20.0	26.2	0.1	0.6	0.5
Nicaragua	89.1	40.3	69.8	0.3	2.0	1.0
Bolivia	95.0	63.9	86.1	0.2	0.1	0.2
Peru	61.0	49.2	57.5	0.0	0.0	0.0
Unweighted Average	*55.0*	*29.5*	*40.9*	*4.2*	*9.2*	*7.9*

(a) Defined as net purchases less than 10 percent of expenditures
(b) Defined as net purchases greater than 30 percent of expenditures
(c) Staple Crop, Percentage of Rural, Urban, All Households

The share of marginal net food buyers varies from less than 15 percent of the population in Bangladesh, to more than 22 percent of population in Ethiopia, and to more than 86 percent in Bolivia (Table 4). On average, about 41 percent of all households are marginal food buyers. Combined with the fact that, on average, 77% of the households are net food buyers, this means that more than 50 percent of net buyers spend less than 10 percent of their income on staple commodities. For those households, the impact of staple food price changes will be small. On the other hand, among vulnerable food buyers an increase in food prices of 10-20 percent will have significant impacts; in the absence of second order adjustments, this would lower their real incomes by more than 3-6 percent.

Ethiopia and Bangladesh, each with around 19 percent of vulnerable households, had the highest vulnerability rates. Both countries also have large food aid programs where a portion of food is imported from the rest of the world. Zambia at 13 percent is a distant third. On the other hand, poor countries such as Cambodia, Vietnam, and Latin American countries have very small vulnerable populations. On average, only 8 percent of households were vulnerable food buyers. Similarly in 6 of the 9 countries in the sample, vulnerable households are a very small percentage of the total households, and assisting these vulnerable households could be easier than a larger population.

[20] Here we use the cutoff point at 10 percent. But other cutoff points less than 10 percent do not change the picture across countries.

In urban areas, only Ethiopia has significant numbers of vulnerable households. In all other countries, vulnerable households in urban areas were lower than 10 percent of the urban population. In rural areas, vulnerable households constitute a greater proportion of households. Again, Ethiopia, Bangladesh and Zambia are the countries where the number of vulnerable households are large and will be significantly affected by food price changes. Thus, the vulnerability is low in countries where the incomes are higher such as the Latin American countries, or in countries where the proportion of net food buyers are low, such as in the Asian countries i.e. Cambodia and Vietnam.[21]

III. C. Relative Incomes

The ratio of net food buyer's average incomes to the average incomes of net food sellers are shown in Table 5 as measured by expenditures.[22] At the national level, only Bangladesh had average incomes of net food sellers significantly above the average incomes of the net food buyers.[23] In all other countries, on average, net food sellers were poorer than net food buyers. In the case of Vietnam, while the buyers are richer, the differences are statistically significant only at 90 percent level. Ceteris paribus, higher food prices would transfer income from food buyers to sellers and thereby on average from richer to poorer households. In this sense, the impact of higher food prices can be interpreted as pro-poor. Protection of food crops would also have the same first round effect, that is, it would transfer income from a relatively richer group to a relatively poorer one.

Table 5. Ratio of Average Expenditures of Net Sellers and Net Buyers

	National			Rural		
	All	*Poor*	*Rich*	*All*	*Poor*	*Rich*
Ethiopia	0.91**	1.01	0.82***	0.99	1.03	1.02
Zambia	0.75***	0.91**	0.95	0.97	0.97	0.91
Cambodia	0.78***	1.1***	0.66***	0.97***	1.1***	0.8**
Bangladesh	1.25***	1.34***	1.10	1.49***	1.36***	1.27***
Vietnam	0.95*	1.16***	1.04	1.11***	1.16***	1.02
Madagascar	0.72***	1.24***	0.83	0.79	1.29***	0.88
Nicaragua	0.72***	0.88***	0.7***	1.07	1.02	1.05
Bolivia	0.74***	1.00	0.84	0.98	1.06**	1.00
Peru	0.70***	1.18***	0.68***	1.26***	1.28	1.06
Unweighted Average	0.84	1.09	0.85	1.07	1.14	1.00

Note: Unweighted average is calculated as average expenditure of seller divided by the average expenditure of buyer households
** Significant at 10%*
*** Significant at 5%*
**** Significant at 1%*

[21] Annex Table A.1.4 shows the vulnerable ratios under the all foods definition. The proportions of households that are vulnerable are much higher under all food definition. In 4 countries more than 50 percent of all households are classified as vulnerable. On average almost 45 percent of all households are vulnerable. Thus, price increases of all food products simultaneously will have a very negative effect on the welfare of a significant section of the households in these countries. On the other hand, there is some validity in thinking that a part of this high number is a statistical artifact, created by the low coverage of income from other food sales.

[22] Expenditures have been used in the income comparisons because they are more accurately measured.

[23] The significance tests in table 5 are the tests of difference of mean expenditure of the two groups.

Part of the likely impact of food price increases would be to transfer income from urban to rural areas. Since rural incomes are lower than urban incomes, these transfers would be on average from richer to poorer households.[24]

In rural areas, the picture is mixed.[25] On average, net food sellers have higher incomes (as measured by expenditure) in three out of nine countries (Bangladesh, Vietnam, and Peru). In Cambodia, rural net food sellers are poorer than net buyers, and in the other five countries, the difference in mean incomes of the two groups is not statistically significant. So, the basic presumption that net food buyers are the relatively poorer households in rural areas is not correct for six out of nine countries.

A second question is whether these relationships hold separately for poor and rich households. Again, rich and poor are defined as households in the bottom four and top two deciles of national income distribution respectively. Among poor households, five of the nine countries' net food seller households had higher incomes than buyers, two countries had the reverse and for the remaining two they were not statistically different. This is similar for the rural poor as well. So among the poor, net buyers are poorer, and the price increases would hurt the relatively poorer of the two groups. Among the rich households, net sellers were poorer in four countries there was no statistically significant difference in five countries.

These findings raise a series of questions about the general conclusion that food price increases would hurt the poor. While more households would lose from food price increases (as more of the population is net buyers), those losing households are on average better off. Food price declines would transfer income from relatively poorer food sellers to relatively better off net food buyers. The richer households would be the greatest beneficiaries of the food price declines as more of the rich households are net buyers compared to poor households (see Table 2).

Finally, Table 5 shows that beyond national numbers, there is quite a variance in relative incomes depending on which group of households are selected for comparison. Thus, one could reach very different conclusions by selecting different sub-groups for comparison. Therefore it is essential for the future studies to be very precise on which groups are used for comparisons and why. The preference in this paper has been to rely on the national comparisons, because food price increases affect all groups and lead to redistribution of income and adjustment for both rural and urban households. The next level for the analysis has been the rural households due to the fact that the output adjustment will mainly take place in rural areas, and also due to the existence of extensive poverty in the rural areas.

[24] This may be disputed because the difference might be attributed to the absence of regional deflators, but income differences are still significant in half of the countries in the sample where there are separate deflators for rural and urban households.

[25] The number of urban net staple food seller households is quite limited and the samples are not representative. That is why they were not presented separately.

IV. Net Food Buyers: A More Detailed Look

As previously mentioned, an important dimension in measuring the full impact of food price changes is the relationships between net buyers and sellers in rural areas. Studies that focus on the first round effects of these relationships generally assume that the incomes of buyers and sellers are independent of each other (for example, the case studies in Hoekman and Olarreaga, 2007). In rural areas and even in small towns, many non-farm jobs depend on links with farm activities. Non-agricultural households supply agricultural inputs and consumer goods to the agriculturalists; and more importantly they supply diverse services for the rural (and more specifically agricultural) community.[26] These local linkages and multipliers have been discussed in the literature and they have been found to be important (Mellor 1976; Hagglade and Hazell 1989; Delgado et al 1998; Block 1999; Datt and Ravallion 1998; Rock 2002; Foster and Rosenzweig 2004, also see Haggblade, Hazel and Dorosh, 2007, for an extensive survey). In rural areas where there is little cash crop income and little income independent of farm activity, most of the income of net food buyers might depend on the activities related to food production. Net buyers' incomes would be mainly business income earned through supplying services and labor to predominantly food producing households. In such cases, changes in food prices might have a stronger indirect impact on food buying rural household incomes through both labor markets and consumption and input and output trade linkages.

On the other hand, some non-farm jobs might be independent of the rural economy, such as workers in industries located in rural areas that only hire labor from the local community; jobs that owe their origin to incomes that originate outside the local area such as remittances; income from urban jobs, etc. However, in rural areas of most low income countries, independent manufacturing jobs are limited. An important non-food income source within agriculture is cash crops. Thus, if the net food buyers receive a significant part of their income from cash crops, or from wage income earned from working on cash crop farms, or receive their income from outside i.e. remittances and transfers, then the income effect of changes in food prices will have little impact on the incomes of the net food buyers. Under these circumstances, first round consumption effects through food prices will be dominant.

To observe these broad relationships, sources of income are derived for net food buyers in rural areas and are compared to the income sources for rural net food sellers. For simplicity, incomes are separated into the following categories, income from food including subsistence production, income form livestock, income from cash crops, wage income which is further separated into wage income from agriculture and non-agriculture, income from business, and other income.[27] We separated the livestock income because the net staple food buyers might be pastoralists that earn livestock income. Finally, we use the occupation of the household head to roughly separate the households into agricultural and non-agricultural households. Table 6 shows the structure

[26] Since food is defined as main staples in this study, they might be producing other food crops.
[27] Ideally this analysis should be carried out at the local community level. It might be possible to undertake such a study in countries with better regional and community level information as a follow up this study.

of incomes for rural net food buyers and sellers. It also shows the primary sector of activity for the head of household

Table 6. Income Source for Rural Net Buyers and Sellers[a] (Percent of HH income)

		Food Crops	Animal or Livestock	Cash Crops	Wages	Ag Wages	Other Wages	Business	Other	Percent HH agriculture
Ethiopia	Buyers	16.26	22.65	11.86	5.59	-	-	14.80	28.73	57.26
	Sellers	58.86	9.62	6.12	1.53	-	-	5.42	18.46	90.91
Zambia	Buyers	34.97	17.06	3.27	11.33	-	-	23.03	10.34	34.66
	Sellers	58.75	16.96	3.03	1.88	-	-	13.06	6.32	86.70
Cambodia	Buyers	33.57	12.95	2.05	22.10	3.66	18.74	-	29.32	-
	Sellers	62.56	15.97	1.27	7.30	0.02	7.28	-	12.87	-
Bangladesh	Buyers	13.42	-	-	42.61	18.49	24.17	32.51	11.37	46.96
	Sellers	56.19	-	-	12.96	4.17	8.82	22.57	8.04	81.77
Vietnam	Buyers	30.32	12.79	7.37	17.41	7.21	10.20	20.68	11.45	45.85
	Sellers	44.18	16.03	3.60	10.62	3.13	7.49	14.90	10.73	85.06
Madagascar	Buyers	50.80	5.32	7.69	27.63	3.45	24.22	-	8.50	49.32
	Sellers	86.56	2.16	4.87	2.54	0.67	1.86	-	3.88	92.02
Nicaragua	Buyers	11.12	21.90	1.08	47.69	8.65	39.04	14.13	4.04	45.89
	Sellers	49.94	23.32	3.56	18.24	9.35	8.89	0.60	4.34	81.96
Bolivia	Buyers	23.76	15.32	1.26	19.61	5.39	14.22	38.22	1.83	77.78
	Sellers	43.89	16.56	0.54	4.63	0.53	4.10	33.11	1.27	96.79
Peru	Buyers	20.82	20.55	1.39	22.89	3.51	19.38	10.25	24.10	35.53
	Sellers	42.45	14.22	2.33	12.37	1.29	11.08	8.07	20.57	90.13
Unweighted average	Buyers	26.12	16.07	4.50	24.10[b]	7.19[b]	21.42[b]	17.80	13.68	49.16
	Sellers	55.93	14.36	3.16	8.01[b]	2.74[b]	7.07[b]	11.15	9.31	88.17

(a) Staple Crops

(b) The overall average for all wages is calculated using all the countries while the overall averages for agricultural wages and other wages are calculated using only 7 countries (due to the lack of data in Ethiopia and Zambia). Hence, the overall average shares of agricultural and other wages do not add up to the overall average share of all wages.

Unfortunately, not all information is available in all countries. The breakdown of wage income is not available in Zambia and Ethiopia; business income could not be separated from other income in Madagascar and Cambodia; and the occupation of household head was not available in Cambodia. Cash crops income was very low in Bangladesh[28] and it was added to income from food.

Despite the gaps in the data, a few findings stand out. As expected, income sources of the two groups are very different. First, only about 50 percent of net buyer households report agriculture (including livestock) as their main occupation, while almost 90 percent of the net food seller households list agriculture as their main occupation. Second, average crop income for net sellers constitutes almost 56 percent of their incomes, versus about 26 percent for the net buyer households. Moreover, most of this income is from subsistence production. Third, the hypothesis that the primary source of income for net food buyers could be cultivation of cash crops is not correct for this group of countries.

[28] In the original data, the amount of cash crop income was very small (mostly spices) and was added to food items.

Among the rural net food buyers, the share of cash crop income is about 12 percent in Ethiopia and about 7 percent in Vietnam. It is less than 4 percent in the other countries.[29] Fourth, labor market income is much more important for net food buyers than sellers. On average, about 29% of their income originates from wages with 7 percent originating from agricultural wages. This compares with wages being only 8 percent for net sellers. The bulk of the wage income is from non agricultural activities for both groups. Agricultural wages are important only in Bangladesh and Nicaragua. In other countries, wages are earned primarily from non-agricultural activities. Rural net food buyer households earn their incomes primarily from non-agricultural wages and from business income. [30]

In the case of net food sellers, in almost all countries they earn bulk of their income from food crops coupled with either business or some wage income. [31] In the case of net food buyers, different combinations of income sources can be identified. For example, in Ethiopia net buyers are cash crop producers, livestock herders, and business people earning very little wage income. In Bangladesh and Nicaragua, main source of non subsistence income is wages suggesting strong labor market interactions. In Vietnam, it is livestock, cash crops and wages. In Peru, it is livestock and wages. Thus, while the net sellers can be characterized as the stereotypical small holder and farmers, there are different subgroups of net buyers depending on the country and probably the region. Again, cash crop income is much more limited nationwide than wage or business income.

Although the links are not fully articulated, the partial evidence presented suggests that net buyers are predominantly business people and workers that sell their services to the rural community. The absence of significant cash crop income and the general absence of manufacturing activity in these rural areas of low income countries also suggest that they might depend on net food sellers for selling their services. Thus, it is possible that policies that lower food prices and the incomes of net food sellers might also reduce the incomes of at least some of the net food buyers through the income effect.

Unfortunately, the evidence to show the extent and magnitude of the relationships between different types of households is just commonly not available. The simulations using simple relationships focusing mainly on labor markets do not show large second order effects of price changes. On the other hand, Klytchnikova and Diop (2006) and Isik-Dikmelik (2006) analyzing income changes in Bangladesh and Vietnam after big rice price changes found that the change in business incomes of rural households are as large as the changes in agricultural incomes suggesting that secondary effects through consumption and trade linkages might be as important as the direct effects through agricultural incomes. Bussolo et al (2006) have similar findings observing the impact of coffee price changes on non-coffee producing households in Uganda. The incomes of

[29] It would have been desirable to find out what part of agricultural wages originates in food versus cash crops. Unfortunately, this distinction does not exist in our datasets.
[30] These businesses are mostly services. In countries where business income is separated into manufacturing and services, almost all of this income originates in services. This is also true for non agricultural wages, most of that also originates in services.
[31] If the livestock is added to the food crop income, then it is predominantly income from food sources.

non-coffee households also increased in coffee growing regions, probably due to derived demand for their goods and services. While these are illuminating, the exact attribution of income change to commodity price changes is not possible within these data sets and thus, the causality cannot be determined. These results suggest that the detailed analysis of rural households should be carried out using data within rural localities which might illustrate the links between net food seller and buyer households more precisely.

Finally, these simple statistics do not give us any indication about the degree of substitution between food crops, labor incomes, and agricultural product mix. Porto (2005) estimates the elasticity on the consumption and income for Mexico through a model where the status of the household with respect to being net seller or buyer is endogenously determined. Using these full model elasticities, he shows that if the household response is large enough, net buyers can become net sellers and gain from maize price increases.

VI. Conclusions and Policy Implications

It has often been argued that higher food prices will hurt the poor (Coady et al, forthcoming, Byerlee, Myers and Jayne 2006; Christaensen and Demery 2007; Ivanic and Martin 2008; Warr 2005, Hoekman and Olarreaga 2007). This argument is based on the observation that more of the poor households are net food buyers than sellers and higher food prices would lower their real incomes and thus worsen their poverty. These arguments have been applied to studies estimating the impact of unilateral trade policies in developing countries and global trade policy reforms. Reducing agricultural protection in developing, especially low income countries, is said to be pro-poor because lower protection, ceteris paribus, would lower food prices and benefit the poor who are predominantly net food buyers. This argument could lead to the extreme conclusion that to benefit the poor, food prices should stay low and industrial (and some middle income) countries should continue to subsidize and protect their agricultural sectors which would contribute to food surpluses and lower prices while poor developing countries should eliminate or reduce their protection on foodstuffs and import food.

Given the controversies and limited evidence to support both sides and the political problems in advocating the pure “trade” solutions, there were some ad hoc and some more qualified policy recommendations in the literature. For example, in analyzing the implications of trade reforms in the case of Morocco, caveats are made about finding solutions to large pockets of poor cereal producers if unilateral trade reforms are undertaken (Ravallion and Lokshin 2004). In the case of Indonesia, low tariffs on rice are accepted as “reasonable” despite the fact that most poor household are net food buyers (McCulloch et al, forthcoming). In the case of Madagascar, Coady et al (forthcoming) go one step further and show that while these tariff reductions can have substantial beneficial effects on poor net consumers of rice, they could have significant adverse effects on poor net sellers of rice and the biggest gainers are the higher income households.

Based on household surveys from nine countries, this paper sheds some additional light on this debate. Specifically, it argues the following. First, although there are more poor net food buyers then sellers, about half these households are marginal net food buyers, and thus price increases will have a small effect on their welfare. However, there are pockets of vulnerable households in three out of nine countries that need to be taken care of if the food price increases are large and longer lasting.

Second, the average incomes of net food buyers are higher than the average incomes of net food sellers in eight of nine countries. Thus, higher food prices will, on average, transfer income from rich buyers to poorer sellers, and thus be pro poor. If on the other hand the comparison is made only among the poor households, then net food sellers were richer in five countries and poorer in only one country. This is similar for the rural poor as well. So among the poor, net buyers are poorer, and the price increases would hurt the relatively poorer of the two poor groups. However, among the rich, the opposite is true; that is the net food buyers are richer.

Finally and most crucially, what would happen to the incomes of the net food buyers in rural areas if the incomes of the food producers declined (increased) significantly? If the income sources are fully independent, then the first round effects presented here and other places will hold. If, on the other hand, the income sources of the two groups are interdependent, then the impact of an income change for the net food sellers might have an indirect effect on the incomes of the net food buyers. [32] Half of net food buyers in rural areas in our sample of nine countries are not farmers (their incomes come primarily from wages and business). These household incomes are likely to depend on the expenditures of net food sellers, especially in rural areas where the primary economic activity is food production. Hence, lower food prices could lead to lower incomes of net food sellers, which in turn could lead to reduced demand for labor and services from net food buyer households. If this effect dominates, lower food prices, instead of increasing the real incomes (through consumption) of net food buyers in rural areas, might reduce them.

This study has been a first pass to shed light on some of the characteristics of the net- sellers and net-buyers. These different characteristics point us to the fact that the impact of food prices on the poor (or general households) will be heterogeneous and will depend on the mixture of net seller net buyer households in the income distribution and the relationships between their income sources. More detailed data and more studies that try to measure the distributional impacts of price changes over time are needed. In addition, there are few formal models in the literature that captures the second or third order effects fully; especially taking into account the potential interlinkages between household incomes in rural and to some degree in urban areas. We hope this study raised enough questions to spur more detailed looks into these issues.

Finally, policies that generated lower food prices might help the poor but will also transfer income from the poorer rural areas to relatively better off urban households. With

[32] See Porto (2005); using a model that emphasizes second order agricultural wage effects and substitution in consumption, show that poor net food buyers might gain from maize price increases in rural Mexico.

the increase in food prices in the recent times, there are pressures to undertake policies that would try to reverse the increases in food production profitability. One of the problems faced by the food producers in developing countries have been the large support in industrial countries have led to very low international food prices and reduced the returns to agriculture where the predominant agricultural activity is food production.[33] Thus one has to be careful in designing policies in response to the probably temporary food price increases. Policies which would lower food prices in developing countries, could repeat the historical mistakes of taxing the rural sector in developing countries. We now understand that such policies led to the underdevelopment of this sector, and contributed to extensive rural poverty.

[33] Keeping food prices low to help accelerate industrial growth has also contributed to the taxation of agricultural sector (Schiff and Valdes, 1992). Earlier work highlighted the taxation of export crops through export taxes. The new emphasis on eliminating poverty could end up taxing the food crops through lowering their prices below the costs of production.

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Annex I. Tables with all food definition of net sellers/buyers

Table A1.1 Share of Net Food Seller Households[a] (percent)

	GDP Per Capita (PPP) 1998	Percent Rural	Share of Households[b]		
			Urban	*Rural*	*All*
Ethiopia	566	50.74	4.11	53.20	40.55
Zambia	678	47.76	0.52	12.55	7.87
Cambodia	1246	59.99	20.74	57.74	52.25
Bangladesh	1407	79.73	2.30	15.10	12.50
Vietnam	1689	71.16	8.58	57.26	45.39
Madagascar	1741	75.75	17.23	49.12	41.39
Nicaragua	1896	43.88	1.48	18.43	8.03
Boliva	2205	41.98	0.69	26.52	10.35
Peru	4180	35.86	3.06	28.78	10.91
Unweighted Average	1734.2	56.32	6.52	35.41	25.47

(a) Food is defined as all food products
(b) Share of Urban, Rural, and National Households.

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Table A1.2 Share of Net Sellers among the Poor and Rich [a, d]

	Poor [b]			Rich [c]		
	Urban	*Rural*	*All*	*Urban*	*Rural*	*All*
Ethiopia	5.82	51.45	44.29	2.58	54.68	31.07
Zambia	0.88	12.46	10.55	0.38	11.00	4.54
Cambodia	38.14	63.88	61.94	10.85	37.23	26.51
Bangladesh	0.59	10.66	9.78	2.24	19.74	11.77
Vietnam	13.66	56.18	53.56	4.10	46.15	16.53
Madagascar	41.62	56.15	54.46	4.42	26.22	16.24
Nicaragua	1.67	18.02	11.80	1.27	15.97	4.66
Boliva	0.66	31.31	19.28	0.41	20.53	3.80
Peru	6.97	30.47	21.46	1.26	25.44	2.31
Unweighted Average	12.22	36.73	31.90	3.06	28.55	13.05

(a) All food products
(b) Poor households are those in the bottom 40% of the population by per capita income
(c) Rich households are those in the top 20% of the population by per capita income
(d) *Percent of rural and urban, and of rich and poor*

Table A1.3 Share of Households that Produce and Sell Food[c] (Percent)

	Production of Food[a]			Sales of Food[b]		
	Urban	*Rural*	*All*	*Urban*	*Rural*	*All*
Ethiopia	24.00	96.95	78.06	12.66	87.90	68.41
Zambia	30.52	89.36	66.47	9.59	53.87	36.65
Cambodia	44.50	88.09	81.62	37.67	78.89	72.78
Bangladesh	32.22	87.39	76.21	13.59	61.33	51.66
Vietnam	23.81	92.00	75.40	21.32	81.23	66.65
Madagascar	34.04	83.13	71.23	25.44	68.52	58.07
Nicaragua	72.30	92.72	80.20	59.06	79.22	66.85

Boliva	16.10	84.77	41.78	4.37	70.30	20.03
Peru	13.41	87.98	36.17	10.87	76.34	30.86
Unweighted Average	32.32	89.15	67.46	21.62	73.07	52.44

(a) Percent of Households with Positive Food Production
(b) Percent of Households with Positive Food Sales
(c) All food crops

Table A1.4 Intensity of Net Food Purchases[c] (percent)

	Marginal Food Buyers[a]			Vulnerable Food Buyers[b]		
	Urban	Rural	All	Urban	Rural	All
Ethiopia	0.88	6.21	4.83	89.22	29.11	44.68
Zambia	1.83	20.48	13.23	84.69	38.44	56.43
Cambodia	8.16	9.84	9.59	34.38	17.41	19.93
Bangladesh	0.84	4.78	3.98	87.08	57.13	63.20
Vietnam	3.56	12.00	9.94	56.63	13.42	23.94
Madagascar	5.16	6.41	6.11	31.57	16.67	20.29
Nicaragua	2.91	6.70	4.38	82.75	55.03	72.04
Bolivia	0.91	12.44	5.22	84.47	35.84	66.28
Peru	1.84	22.64	9.26	47.87	15.99	36.87
Unweighted Average	2.90	11.28	7.39	66.52	31.00	44.85

(a) Defined as net purchases less than 10 percent of expenditures
(b) Defined as net purchases greater than 30 percent of expenditures
(c) All food, percentage of rural, urban and all households.

Annex II

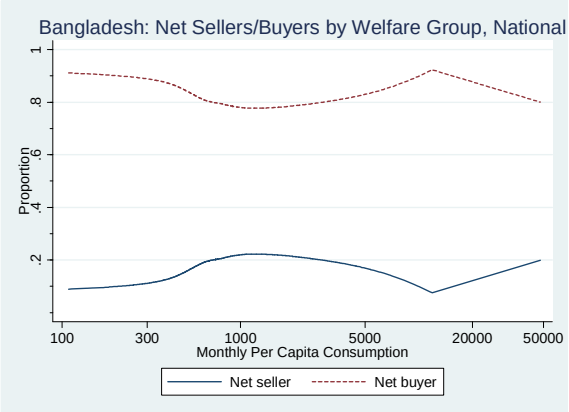
Table A2.1 Crops used in the definition of net sellers/buyers of staple crops.

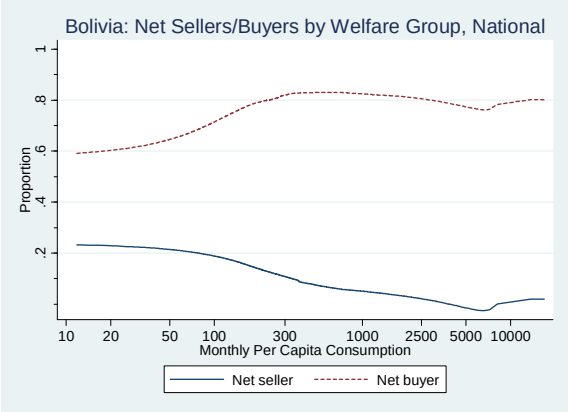
	Staple Crops
Ethiopia	Wheat, Maize
Zambia	Rice, Maize, Groundnut, Beans
Cambodia	Rice, Maize
Bangladesh	Rice
Vietnam	Rice, Maize
Madagascar	Rice, Maize
Nicaragua	Bean, Maize
Bolivia	Rice, Maize,
Peru	Rice ,Maize, Beans,

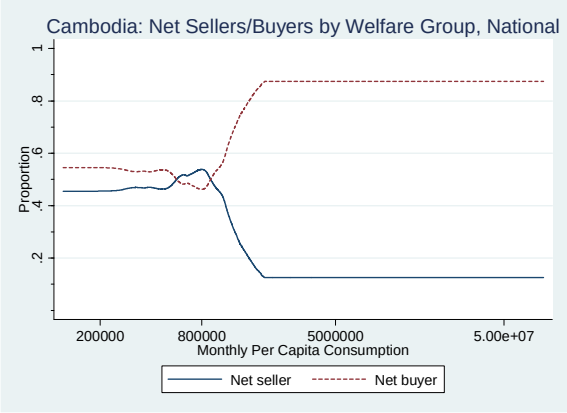
.

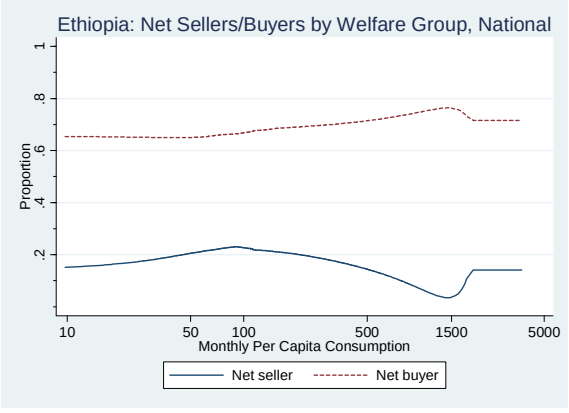
Annex III. Distribution of Net buyer and Seller Households

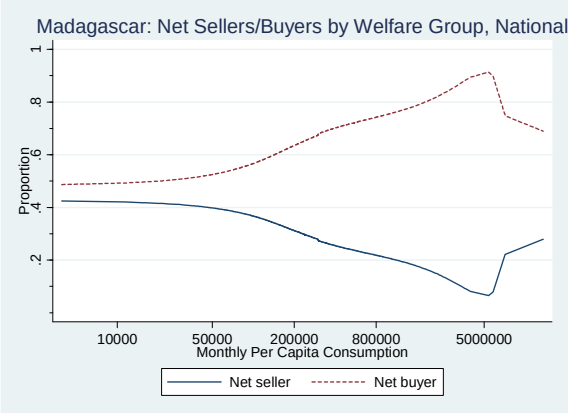
Figure A3.1. Distribution of net sellers/buyers of staple crops by income level. ALL HOUSEHOLDS

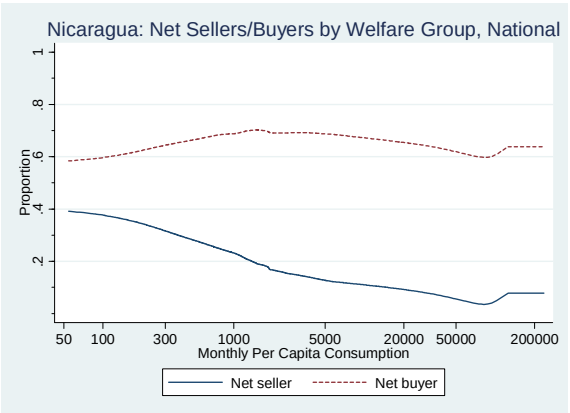


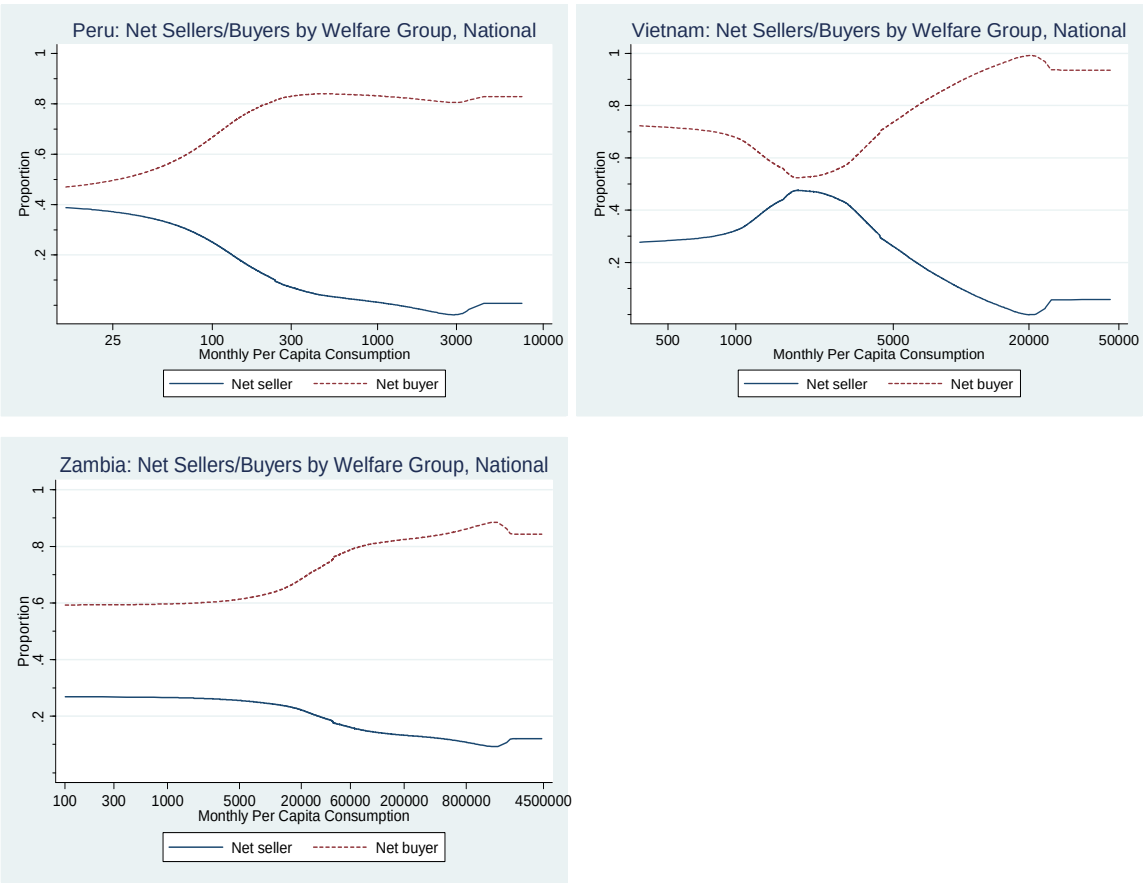






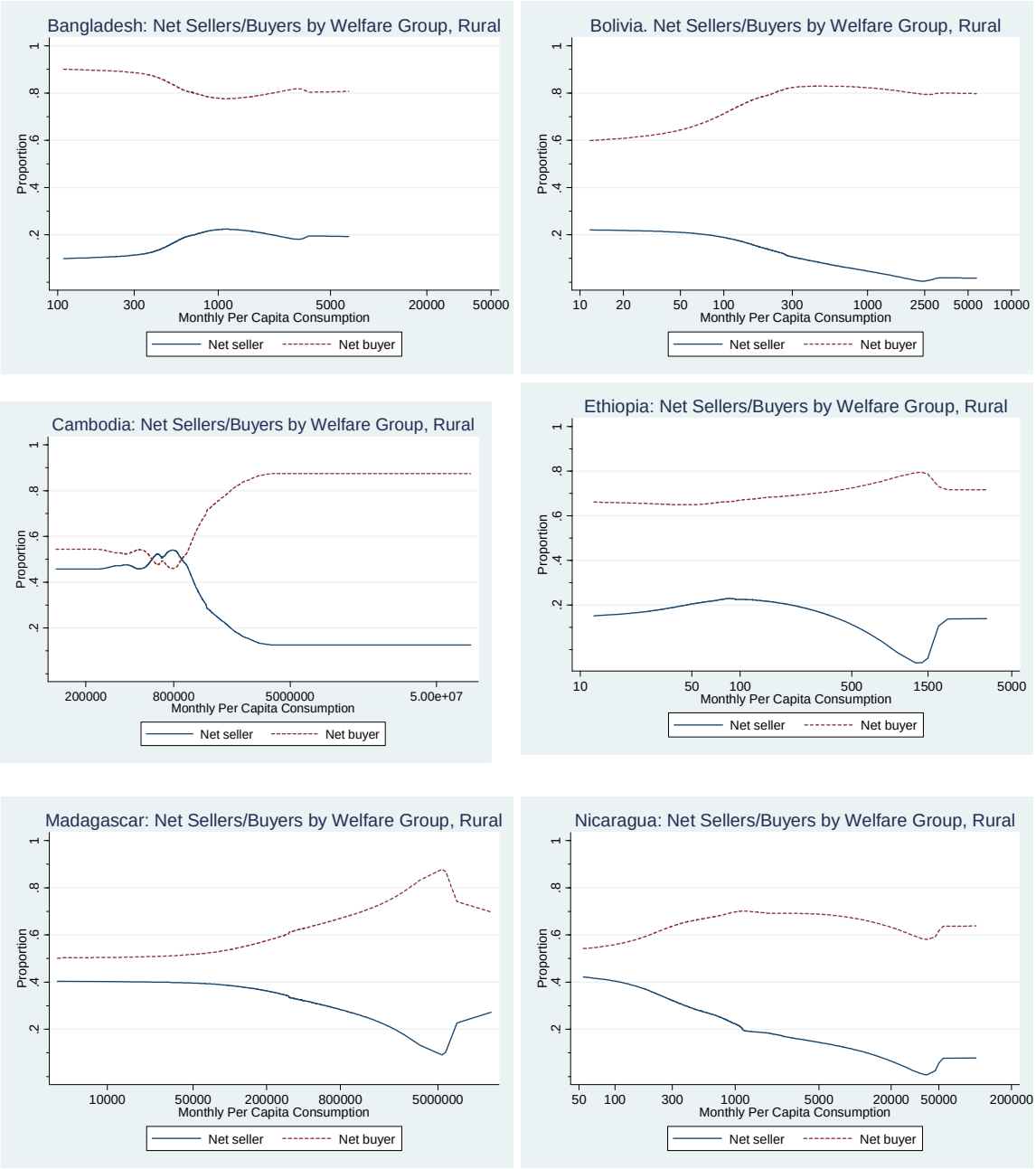


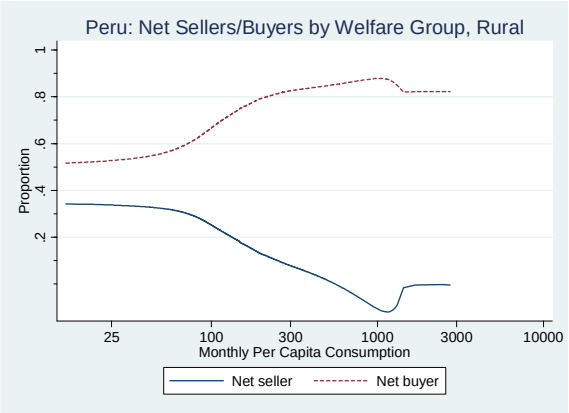


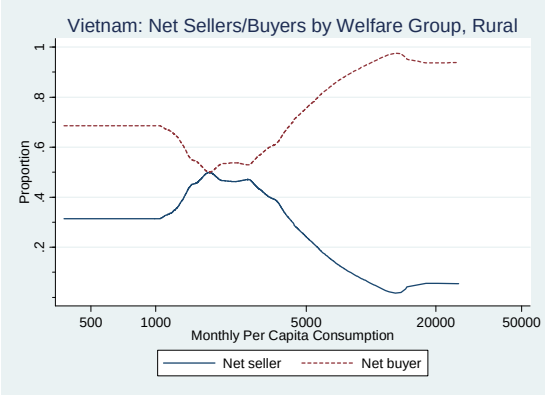


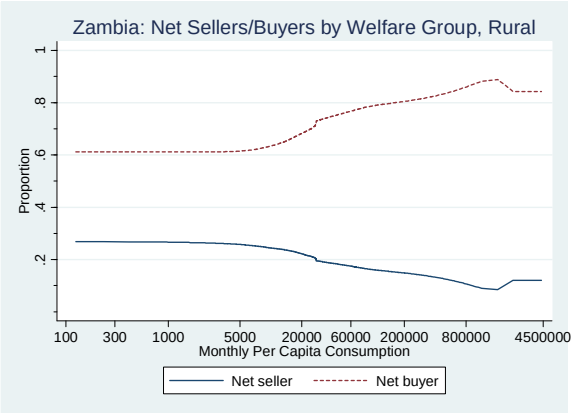
Note: Proportion of net buyers and sellers of staple crops by average decile of monthly per capita consumption (applying lowess smoother to average decile data) using household weights.

Figure A3.2. Distribution of net sellers/buyers of staple crops by income level. RURAL HOUSEHOLDS









Note: Proportion of net buyers and sellers of staple crops by average decile of monthly per capita consumption (applying lowess smoother to average decile data) using household weights.

Annex IV. Description of Data Sources

This study uses household data from nine low income countries to estimate detailed income sources and expenditure patterns for net food buyer and seller households. In order to be reasonably representative, three low income countries from Asia (Bangladesh, Cambodia, and Vietnam), three from Latin America (Bolivia, Nicaragua and Peru) and three from Africa (Ethiopia, Madagascar and Zambia) were selected. The details of each survey are presented below.

The Bangladeshi data are from the 2000 Household Income and Expenditure Survey (HIES) of Bangladesh, conducted by the Bangladesh Bureau of Statistics. The survey includes 7,440 households (5,040 rural) selected through stratified two-stage sample design and interviewed over the course of a 12-month period in 2000. Survey data are representative at the national, urban, rural levels in every region and include detailed data on household composition, income sources, consumption, land holdings, assets and agricultural activities. Data from the survey are used to measure living standards, estimate budget shares for the Consumer Price Index (CPI) and to update the System of National Accounts.

The data for Bolivia are from the 2002 Bolivian Labor Force Survey. The survey was administered by Bolivia National Statistics Institute (Instituto Nacional de Estadística) and was part of a World Bank initiative in the region that started in 1999 to improve the surveys and measurement of living conditions (Programa de Mejoramiento de las Encuestas y Medición sobre Condiciones de Vida, MECOVI). The field work took place during November and December. The survey stayed includes information on members of the home, non-labor migration, health, education, employment, income, expenses in consumption, house, assets and loans of the home and business of the independent farming producer.

For Cambodia, data from the Cambodia Socioeconomic Survey (CSES) 1999 are used. This survey was conducted by the Cambodian National Institute of Statistics in two rounds to take into account the effect of seasonality on consumption and income, especially for rural households. Specifically, the sample was split into two sub-samples, with households in one sub-sample interviewed in January-March and the second sub-sample interviewed in June-August (Gibson 1999). The survey includes 6,000 households and is representative at the national, rural, and urban levels. It is the first attempt to collect detailed information on household incomes in Cambodia. The survey includes a core household questionnaire with information on expenditure, household composition, education health, and etc. and a special-purpose module that contains information about employment and income for the 1999 survey.

The data for Ethiopia are from two household surveys: the 1999/2000 Welfare Monitoring Survey (WMS) and the 1999/2000 Household Income, Consumption, and Expenditure Survey (HICES). The HICES includes information on household composition, education, household consumption and expenditures, and household

income. Both surveys are nationally representative at the regional level. They use a stratified two-stage sample design (three-stage for some areas).

The Madagascar data are from *Enquete Prioritaire Aupres des Menages* (EPM), undertaken by the Direction des Statistiques des Ménages (DSM) of the Institut National de la Statistique (INSTAT) during the last quarter of 2001. The survey sample consists of 5,080 households, is multi-staged, stratified and representative at the national and regional level (*faritany*) as well as the urban/rural level within each region. It includes data on income, consumption, household characteristics, and individual characteristics.

The 2001 Nicaraguan Living Standards Monitoring Survey (*Encuesta Nacional de Hogares sobre Medición Del Nivel de Vida, 2001)* is used for Nicaragua data. 4,191 households were surveyed by the Nicaraguan National Institute for Statistics and census (Instituto Nacional de Estadísticas y Censos) between April 2001 and August 2001. The sample is designed to be a panel with the 1998 survey collection. The survey includes detailed data on education, health, economic activity, housing, consumption, household enterprise and agro-pastoral activities.

The Peruvian data are from Living Conditions and Welfare Household Survey of 2003. The sample is nationally representative, stratified and multi-staged. The field work took place between May 2003 and April 2004. The survey includes information on household composition, education, health, employment, household income, agricultural activity, household consumption and expenditures. The reference periods are the day of the interview, last 15 days, last month, and last 12 months.

The Vietnam data are from the Vietnam Living Standards Survey (VLSS) for 1998. For this survey, 6,001 households were surveyed by the Vietnamese General Statistics Office between December 1997 and December 1998. The survey is stratified, multi-staged, and clustered. The sample includes a panel with the 1993 VLSS. The survey includes detailed data on household composition, education, employment, expenditure, land holdings, and agricultural activities.

The data for Zambia are from the 1998 Living Conditions Monitoring Survey produced by the Central Statistical Office (CSO) in Zambia. 16710 households were surveyed by CSO; and the data collection took place between November1998 to December 1998. The survey is nationally representative, stratified and multi-staged. It includes data on household income, agricultural production, non-farm activities, economic activities, expenditures, household assets, household characteristics (demographics), health, and education.